SEQUENCE LISTING

<110> KIM, DO-MAN
KANG, HEE-KYOUNG
LEE, JIN-HA

<120> PROTEIN WITH ACTIVITY OF HYDROLYZING AMYLOPECTIN, STARCH, GLYCOGEN AND AMYLOSE, GENE ENCODING THE SAME, CELL EXPRESSING THE SAME, AND PRODUCTION METHOD THEREOF

<130> 44352-0011-00US

<140> 10/588,052
<141> 2006-07-31

<150> PCT/KR05/00235
<151> 2005-01-27

<150> KR 10-2004-0006186
<151> 2004-01-30

<160> 83

<170> PatentIn version 3.3

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Val Thr Val Leu Ser Ser Pro Glu Ser Val Thr Ser Ser Asn His Val
        35                  40                  45

Gln Leu Ala Ser His Glu Met Cys Asp Ser Thr Leu Ser Ala Ser Leu
    50                  55                  60

Tyr Ile Tyr Asn Asp Asp Tyr Asp Lys Ile Val Thr Leu Tyr Tyr Leu
65                  70                  75                  80

Thr Ser Ser Gly Thr Thr Gly Ser Val Thr Ala Ser Tyr Ser Ser Ser
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Ala Val Glu Ile Thr Gly Ala Ser Tyr Val Asp Ser Asp Ala Ser Ala
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Thr Tyr Ala Thr Ser Phe Asp Ile Pro Leu Thr Thr Thr Thr Thr Ser
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Ser Ser Ser Ala Ser Ala Thr Ser Thr Ser Ser Leu Thr Thr Thr Ser
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Ser Val Ser Ile Ser Val Ser Val Pro Thr Gly Thr Ala Ala Asn Trp
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Arg Gly Arg Ala Ile Tyr Gln Ile Val Thr Asp Arg Phe Ala Arg Thr
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Asp Gly Ser Thr Thr Tyr Leu Cys Asp Val Thr Asp Arg Val Tyr Cys
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Gly Gly Ser Tyr Gln Gly Ile Ile Asn Met Leu Asp Tyr Ile Gln Gly
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Asp Asp Thr Gly Tyr Gly Tyr Ala Tyr His Gly Tyr Trp Met Lys Asp
                245                 250                 255

Ile Phe Ala Leu Asn Thr Asn Phe Gly Thr Ala Asp Asp Leu Ile Ala
            260                 265                 270

Leu Ala Thr Glu Leu His Asn Arg Gly Met Tyr Leu Met Val Asp Ile
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Val Val Asn His Phe Ala Phe Ser Gly Ser His Ala Asp Val Asp Tyr
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Ser Glu Tyr Phe Pro Tyr Ser Ser Gln Asp Tyr Phe His Ser Phe Cys
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Trp Ile Thr Asp Tyr Ser Asn Gln Thr Asn Val Glu Gln Cys Trp Leu
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Val Lys Ser Glu Tyr Gln Ser Trp Val Gln Glu Leu Ile Ala Asn Tyr
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Ser Ile Asp Gly Leu Arg Ile Asp Thr Val Lys His Val Gln Met Asp
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Phe Trp Ala Pro Phe Gln Glu Ala Ala Gly Ile Tyr Ala Val Gly Glu
385                 390                 395                 400

Val Phe Asp Gly Asp Pro Ser Tyr Thr Cys Pro Tyr Gln Glu Asn Leu
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Asp Gly Val Leu Asn Tyr Pro Val Tyr Tyr Pro Val Val Ser Ala Phe
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Glu Ser Val Ser Gly Ser Val Ser Ser Leu Val Asp Met Ile Asp Thr
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Leu Lys Ser Glu Cys Thr Asp Thr Thr Leu Leu Gly Ser Phe Leu Glu
    450                 455                 460

Asn Gln Asp Asn Pro Arg Phe Pro Ser Tyr Thr Ser Asp Glu Ser Leu
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Ile Lys Asn Ala Ile Ala Phe Thr Met Leu Ser Asp Gly Ile Pro Ile
                485                 490                 495

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            500                 505                 510

Asn Arg Glu Ala Leu Trp Leu Thr Gly Tyr Ser Thr Thr Ser Thr Phe
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Tyr Lys Tyr Ile Ala Ser Leu Asn Gln Ile Arg Asn Gln Ala Ile Tyr
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Lys Asp Asp Thr Tyr Leu Thr Tyr Gln Asn Trp Val Ile Tyr Ser Asp
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Leu Ser Asn Thr Gly Tyr Thr Ala Ser Ser Val Val Tyr Glu Ile Leu
        595                 600                 605

Thr Cys Thr Ala Val Thr Val Asp Ser Ser Gly Asn Leu Ala Val Pro
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            20                  25                  30

gtt acg gtc ttg tcc tcc cct gag tct gtg acg agt tcg aac cat gtt      144
Val Thr Val Leu Ser Ser Pro Glu Ser Val Thr Ser Ser Asn His Val
        35                  40                  45

cag cta gcc agt cat gag atg tgc gac agt acc ttg tca gcg tcc ctt      192
Gln Leu Ala Ser His Glu Met Cys Asp Ser Thr Leu Ser Ala Ser Leu
    50                  55                  60
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aca tcg tcg ggc aca act ggg tcc gta aca gcg tct tat tct tct agt      288
Thr Ser Ser Gly Thr Thr Gly Ser Val Thr Ala Ser Tyr Ser Ser Ser
                85                  90                  95

ttg agt aac aac tgg gaa ttg tgg tct ctc tcg gct ccg gct gca gat      336
Leu Ser Asn Asn Trp Glu Leu Trp Ser Leu Ser Ala Pro Ala Ala Asp
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gct gtc gag atc act gga gct agt tat gta gac agc gat gca tct gcg      384
Ala Val Glu Ile Thr Gly Ala Ser Tyr Val Asp Ser Asp Ala Ser Ala
        115                 120                 125

aca tac gcc acg tct ttt gat ata cct ctt act acc acg aca acg tcg      432
Thr Tyr Ala Thr Ser Phe Asp Ile Pro Leu Thr Thr Thr Thr Thr Ser
    130                 135                 140

tcg tct tct gct agt gcg act tca aca tct agt cta acc aca aca tct      480
Ser Ser Ser Ala Ser Ala Thr Ser Thr Ser Ser Leu Thr Thr Thr Ser
145                 150                 155                 160

agt gtt tcc att tcg gtg tcc gtc cct aca gga aca gct gca aat tgg      528
Ser Val Ser Ile Ser Val Ser Val Pro Thr Gly Thr Ala Ala Asn Trp
                165                 170                 175

cga ggt agg gct atc tat cag atc gtg act gat aga ttt gca cgc act      576
Arg Gly Arg Ala Ile Tyr Gln Ile Val Thr Asp Arg Phe Ala Arg Thr
            180                 185                 190

gac ggc tcc acc aca tat tta tgc gat gtt acc gat agg gtc tat tgc      624
Asp Gly Ser Thr Thr Tyr Leu Cys Asp Val Thr Asp Arg Val Tyr Cys
        195                 200                 205

gga ggg tct tat cag ggg att atc aat atg ctg gat tac atc caa ggc      672
Gly Gly Ser Tyr Gln Gly Ile Ile Asn Met Leu Asp Tyr Ile Gln Gly
    210                 215                 220

atg ggc ttt act gct att tgg att tct cct ata gtg gaa aat att ccc      720
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225                 230                 235                 240

gat gac acc gga tac ggt tac gca tat cat ggt tat tgg atg aaa gat      768
Asp Asp Thr Gly Tyr Gly Tyr Ala Tyr His Gly Tyr Trp Met Lys Asp
                245                 250                 255

atc ttc gcc ctg aat aca aat ttt ggt act gca gac gat ttg ata gcg      816
Ile Phe Ala Leu Asn Thr Asn Phe Gly Thr Ala Asp Asp Leu Ile Ala
            260                 265                 270

ttg gct acg gaa ttg cat aat cgc ggc atg tac ttg atg gtt gat att      864
Leu Ala Thr Glu Leu His Asn Arg Gly Met Tyr Leu Met Val Asp Ile
        275                 280                 285
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gtt gtc aat cac ttt gct ttc tca gga agt cat gcc gac gtg gac tac      912
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tct gaa tat ttc ccg tat tcg tcc cag gat tat ttt cat tca ttt tgc      960
Ser Glu Tyr Phe Pro Tyr Ser Ser Gln Asp Tyr Phe His Ser Phe Cys
305                 310                 315                 320

tgg att aca gat tac tcg aat cag aca aac gtt gag cag tgc tgg ctt     1008
Trp Ile Thr Asp Tyr Ser Asn Gln Thr Asn Val Glu Gln Cys Trp Leu
                325                 330                 335

ggc gac gat act gtt cct ctc gtg gac gtc aat acc caa ctt gac acc     1056
Gly Asp Asp Thr Val Pro Leu Val Asp Val Asn Thr Gln Leu Asp Thr
            340                 345                 350

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Val Lys Ser Glu Tyr Gln Ser Trp Val Gln Glu Leu Ile Ala Asn Tyr
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Ser Ile Asp Gly Leu Arg Ile Asp Thr Val Lys His Val Gln Met Asp
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ctc aag tct gaa tgc acc gac act act ctc cta ggc tcc ttt cta gag     1392
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Asn Gln Asp Asn Pro Arg Phe Pro Ser Tyr Thr Ser Asp Glu Ser Leu
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att aaa aat gcg atc gct ttc act atg ctc tca gac ggc att ccc ata     1488
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att tat tac ggt cag gag caa ggc ctc aat ggt gga aac gat ccc tat     1536
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    530                 535                 540

aaa gat gat act tat ctc aca tat cag aac tgg gtt att tat tcg gat     1680
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            580                 585                 590

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